

CLAIMS

We claim:

1. A louver assembly for use in a heat exchange apparatus in an ambient environment, the heat exchange apparatus being associated with a liquid basin, the louver assembly having a height and comprising a plurality of generally vertically oriented, non-corrugated sheets of material, and a plurality of generally vertically oriented corrugated sheets of material having corrugations extending across the corrugated sheet and along the corrugated sheet for the entire height of the louver assembly, each non-corrugated sheet of material being retained adjacent to a corrugated sheet of material; spaces between the corrugations and the non-corrugated sheets forming air passageways extending downwardly through the louver assembly from an inlet face of the louver assembly adjacent the ambient environment to an outlet face of the louver assembly adjacent an interior of the heat exchange apparatus; the louver assembly having a width based on the dimensions of the sheets in a direction along the inlet face and the outlet face of the louver assembly and the number of non-corrugated sheets and corrugated sheets comprising the louver assembly; the louver assembly having a depth defined by the distance from the inlet face to the outlet face of the louver assembly; the louver assembly having a generally vertical longitudinal reference plane extending through a centerline along the louver assembly's width and a generally vertical transverse reference plane extending perpendicular to the longitudinal reference plane; each sheet of material having a V-shape in a top plan view of the louver assembly, the V-shape of the non-corrugated sheets and the corrugated sheets being defined by two acute angles X and Y on one surface of the sheets with respect to the transverse reference plane and resulting in a vertex angle Z on an opposite surface of the sheets, the vertex angle Z being about 120° to about 140° ; the V-shape of the sheets providing each of the corrugations and air passageways with a single inlet portion extending from the inlet face of the louver assembly to the longitudinal reference plane and a single outlet portion extending from the longitudinal reference plane to the outlet face of the louver assembly; the angle X being measured with respect to the intersection of the longitudinal and transverse reference planes regarding the inlet portion and the angle Y being measured with respect to the intersection of the longitudinal and transverse reference planes regarding the outlet portion; the inlet portion having a downwardly directed angle A1 of greater than 0° to about 10° with respect to a horizontal reference plane measured from an intersection of the inlet face and the horizontal reference plane; the outlet portion having a downwardly directed angle A2 of greater than 0° to about 10° with respect to a

horizontal reference plane measured from the intersection of the inlet face and the horizontal reference plane; and each of the air passageways having a width generally parallel to the longitudinal reference plane such that there is a ratio of the depth of the louver assembly to the width of each of the air passageways of about 3:1 to about 6:1.

5 2. The louver assembly of claim 1, wherein the angle X is about 20° to about 30° and the angle Y is about 20° to about 30° .

3. The louver assembly of claim 2, wherein the angles X and Y are substantially equal to each other.

10 4. The louver assembly of claim 3, wherein each of the angles X and Y is about 25° , whereby the angle Z is about 130° .

5. The louver assembly of claim 2, wherein the angle X is greater than the angle Y.

6. The louver assembly of claim 5, wherein the angle Z is about 130° .

15 7. The louver assembly of claim 1 wherein the inlet portion has a depth from the inlet face to the longitudinal reference plane and the outlet portion has a depth from the longitudinal reference plane to the outlet face, and wherein the depth of the inlet portion is about equal to the depth of the outlet portion.

20 8. The louver assembly of claim 1 wherein the inlet portion has a depth from the inlet face to the longitudinal reference plane and the outlet portion has a depth from the longitudinal reference plane to the outlet face, and wherein the depth of the inlet portion is greater than the depth of the outlet portion.

9. The louver assembly of claim 1 wherein the inlet portion has a depth from the inlet face to the longitudinal reference plane and the outlet portion has a depth from the longitudinal reference plane to the outlet face, and wherein the depth of the outlet portion is greater than the depth of the inlet portion.

25 10. The louver assembly of claim 1, wherein each of the angles A1 and A2 independently is about 5° to about 10° .

11. The louver assembly of claim 10, wherein each of the angles A1 and A2 is about 10° .
12. The louver assembly of claim 4, wherein each of the angles A1 and A2 is about 10° .
13. The louver assembly of claim 6, wherein each of the angles A1 and A2 is about 10° .
14. The louver assembly of claim 1, wherein the depth of the louver assembly is about
5 1.75 inches (4.4 cm) to about 8.25 inches (21.0 cm).
15. The louver assembly of claim 14, wherein the depth of the louver assembly is about
2.8 inches (7.1 cm) to about 3.6 inches (9.1 cm).
16. The louver assembly of claim 12, wherein the depth of the louver assembly is about
3.2 inches (8.1 cm).
- 10 17. The louver assembly of claim 1, wherein the width of an air passageway is about 0.5
inch (1.3 cm) to about 1.5 inches (3.8 cm).
18. The louver assembly of claim 17, wherein the width of an air passageway is about
0.65 inch (1.7 cm) to about 1.0 inch (2.5 cm).
19. The louver assembly of claim 18, wherein the width of an air passageway is about
15 0.75 inch (1.9 cm).
20. The louver assembly of claim 1, wherein the ratio of the depth of the louver assembly
to the width of each of the air passageways is about 3.5:1 to about 5.5:1.
21. The louver assembly of claim 20, wherein the ratio of the depth of the louver
assembly to the width of each of the air passageways is about 4.3:1.
- 20 22. The louver assembly of claim 1, wherein the angle X is about 20° to about 30° , the
angle Y is about 20° to about 30° and the angle X is substantially equal to or greater than the angle
Y, wherein each of the angles A1 and A2 is about 5° to about 10° , wherein the depth of the louver
assembly is about 1.75 inches (4.4 cm) to about 8.25 inches (21.0 cm), and wherein the width of an
air passageway is about 0.5 inch (1.3 cm) to about 1.5 inches (3.8 cm).

23. The louver assembly of claim 22, wherein the angle X is about 20° to about 30° , the angle Y is about 20° to about 30° and angles X and Y are substantially equal, wherein each of the angles A1 and A2 is about 5° to about 10° , wherein the depth of the louver assembly is about 2.8 inches (7.1 cm) to about 3.6 inches (9.1 cm), wherein the width of an air passageway is about 0.65 inch (1.7 cm) to about 1.0 inch (2.5 cm), and wherein the ratio of the depth of the louver assembly to the width of each of the air passageways is about 3.5:1 to about 5.5:1.

24. The louver assembly of claim 23, wherein each of the angles X and Y is about 25° and the angle Z is about 130° , wherein each of the angles A1 and A2 is about 10° , wherein the depth of the louver assembly is about 3.2 inches (8.1 cm), wherein the width of an air passageway is about 0.75 inch (1.9 cm), and wherein the ratio of the depth of the louver assembly to the width of each of the air passageways is about 4.3:1.

25. The louver assembly of claim 1, wherein the corrugations comprise adjacent peaks and valleys, and the peaks of one corrugated sheet are 180° out of phase with the peaks of an adjacent corrugated sheet, such that the peaks of one corrugated sheet are aligned with the valleys of adjacent corrugated sheets.

26. The louver assembly of claim 1, wherein the corrugations comprise adjacent peaks and valleys, and the peaks of one corrugated sheet are in phase with the peaks of an adjacent corrugated sheet, such that the peaks of one corrugated sheet are aligned with the peaks of adjacent corrugated sheets and the valleys of one corrugated sheet are aligned with the valleys of adjacent corrugated sheets.